Project Proposal:
The Global Food Database and EAT Report: The State of the Global Food System

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Proposal prepared by the working group- a partnership between

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State of the Global Food System: Global Food Database & EAT Report Project Summary

The global food system is a major determinant of both health and environmental outcomes: adequate nutrition and sustainable food production are fundamental prerequisites for achieving global sustainable development.

Yet despite the extensive linkages between factors underlying health and environmental sustainability in the context of food systems, these issues have largely been addressed in siloes within research, business and policy spaces. In light of this lack of integration, the **EAT Initiative**, the **Sustainable Development Solutions Network (SDSN),** and the **CGIAR Consortium** will create a **Global Food Database (GFD)** and an associated **EAT Report** that will provide an evidenced-based narrative around priority actions to achieve universal access to affordable, healthy and diverse diets whilst ensuring environment sustainability. This work will also serve as a complementary reporting framework for the Sustainable Development Goals (SDGs) relating to food, health and environmental sustainability.

Global Food Database: The Global Food Database will be an interactive repository of data on indicators that collectively track progress towards healthy and sustainable diets. Drawing data from a range of sources, the database will enable a broader quantitative analysis and mapping of key trends of the global food system, and users will be able to conduct novel visualizations. As an open-access and freely downloadable database it will serve as a comprehensive and intelligible self-learning platform for food industry leaders, policymakers, scientists, civil society organizations and the general public. Recognising that significant data gaps in the global food system exist, a long-term ambition of the project will be the development of strategies and methodologies for empirical or model-based generation of missing data.

EAT Report: An annual EAT Report on the State of the Global Food System will highlight trends, gaps and solutions to catalyse action towards achieving healthy and sustainable diets. The report will illustrate the interconnections between food, nutrition, health, environment and development through highlighting the latest evidence, complemented by case studies and novel forms of data analysis. A unique and defining component of the EAT Report will be the EAT Index, a ranking of countries based on composite indices of healthy and sustainable diets.

Mobilising expertise from each of the three partner organisations, a **Project Leadership Committee** will oversee the development and governance of the project. The project will also enlist advisory support from leading experts in the field through an **Independent Expert Advisory Group** to guide content development. A **Project Secretariat** housed at one of the three partner organisations will manage the day-to-day operations, research and outreach. The Secretariat will be comprised of a small team of researchers and development practitioners experienced in project management and conducting high-level research.

The Project will be launched at the EATx event coinciding with the adoption of the post-2015 agenda in September 2015. A beta version of the Global Food Database and a synthesis EAT Report will be launched at the 3rd Annual EAT Stockholm Food Forum in June 2016. Launch of the inaugural report will take place at the 4th Annual Stockholm Food Forum in June 2017 complemented by events organised through SDSN and CGIAR.

2. BACKGROUND

A sustainable global food system as well as better nutrition and health for all depend on the health of the environment (Pinstrup-Andersen, 2011). Yet the current global food system is characterized by negative impacts both on human and planetary health (Whitmee et al., 2015).

The food and agriculture sector is the single largest driver of climate and ecosystem change in the world (Garnett, 2013). Environmental sustainability is, reciprocally, a fundamental determinant of the outcome of food production and is thereby of major importance for future global food security and nutrition (Porter et al., 2014).

At the same time, the world faces multiple burdens of malnutrition: while nearly 800 million people still go hungry, more than 2 billion suffer from micronutrient deficiencies, and 2.1 billion are overweight or obese (FAO, 2015; Ng et al., 2014). Undernutrition hampers cognitive development and productivity (Horton and Steckel, 2013) whilst, overweight and obesity are closely associated with the rapid rise in non-communicable diseases (NCDs), such as cardiovascular disease, type 2 diabetes and several cancers. Underlying these changes are an increasing demand for more Western diets which are typically high in animal proteins and characterized by low-quality foods high in added salt, sugar and fats – foods that are also often associated with a large environmental footprint.

Scientific evidence points towards significant interactions – synergies, trade-offs and feedbacks – between food systems, nutrition, health, and the environment. For example, the increase in extreme weather events due to climate change negatively affects crop yields and disproportionally affects farmers in low-income countries with fewer resources to prepare for these impacts. The overuse of antibiotics in animal farming is threatening the effectiveness of antibiotic drugs to cure human diseases, and the mass-use of pesticides is causing widespread decline of pollinators as well as constituting an immediate threat to human health in certain parts of the world (Cho et al., 2012; WHO, 2014).

Such interdependencies represent huge opportunities for cost-effective 'win-win' solutions. Yet despite the multitude of linkages between factors underlying nutrition, public health and environmental sustainability in the context of food systems, these issues have been largely addressed in siloes both within research and policy. Breaking these silos is fundamental to create a holistic agenda across academic disciplines and policy sectors. A crucial first step to integrating these areas is to consolidate the current knowledge and provide tools to analyze food, nutrition, health, and environmental sustainability trends across the global food system.

3. RATIONALE

The scientific community has made recent advances in developing frameworks and methodologies to investigate synergies and trade-offs between nutrition, health, and the environment in the context of specific dietary patterns (Nesheim et al., 2015; Garnett et al., 2014, Heller et al., 2013; Lukas et al., 2015; Johnston et al., 2014). While such frameworks

have been proposed in the scientific literature, none have been applied systematically in practice.

Similarly, multiple global reports on food- and nutrition-related issues exist that aim to synthesize scientific knowledge and data to a broader audience. However, the reports tend to primarily document either the nutrition, and health dimensions (e.g. the State of Food Insecurity Report or the Global Nutrition Report), policy dimensions (e.g. the Global Food Policy Report), socio-economic and trade dimensions (e.g. Food Outlook or the State of Food and Agriculture Report) or environmental dimensions (e.g. the World Resources Report and forthcoming Global Sustainable Development Report) of food systems and diets. No global annual report currently takes a systematic and integrated approach to these different dimensions.

Furthermore, no food database provides an integrated account of the global food system's interactions with nutrition, public health, and the environment. For instance, FAOSTAT focuses on food production, AQUASTAT and IPCC focus on resource use and environmental impacts, WHO focuses on nutrition and health, COMTRADE focuses on global food trade, and the World Bank and Food Security Portal focus on development in general and food policy developments. An integrated global monitoring system and data repository is thus urgently needed to gather currently scattered data and allow for holistic assessments of issues at the food-health-sustainability nexus.

In the light of this gap, the EAT Initiative, the Sustainable Development Solutions Network (SDSN) and the CGIAR Consortium will create a Global Food Database with an associated EAT Report. The Global Food Database (GFD) will underpin the contents of the EAT Report by serving as the number one repository for global and country-level data linking food, nutrition, health and environmental sustainability. Drawing on the database, the EAT Report will provide a compelling narrative to illustrate how the global food system requires an urgent transformation to support nutritious and healthy diets without compromising environmental sustainability, as a prerequisite for overall sustainable development.

4. PROJECT AIMS

The project intends to illustrate in novel, creative ways the multiple complex interactions between food systems, nutrition, public health, and the environment. By consolidating data and presenting information in an interactive way the project aims to inform a broad audience on the relationship between different aspects of nutrition, health, and sustainability in the context of specific diets and food production practices.

By bridging and complementing existing food-related reports and databases that have a narrower thematic focus, this project aspires to facilitate better decision-making by governments, private enterprises, international institutions and consumers that leverage the synergies between food systems, nutrition, public health and the environment. Based on the synthesis of data and evidence, the EAT Report will provide concrete recommendations on how institutional capacity needs to be strengthened and how to support best practices within both policy and industry sectors. Bringing insight, evidence and analysis from these formerly

siloed sectors will create a broader and integrated perspective on global food systems. The EAT Report will also point towards critical issues and world regions in need of acute attention. The database will serve as the world's most comprehensive and intelligible self-learning platform for industry leaders, decision-makers, scientists, civil society organisations and the general public. In addition, the project seeks to build accountability and spark increased commitment to addressing these issues.

As the Global Food Database will comprise integrated indicators interlinking food, nutrition, health and environmental sustainability, it will create important linkages between different Goals and Targets under the Sustainable Development Goals (SDG) framework. The project will thus support the forthcoming monitoring of SDGs cross-cutting food, nutrition, health and environmental sustainability (Appendix Figure 7).

Gathering data from currently scattered sources, the project will identify gaps and subsequently stimulate data generation to address these gaps, particularly in regions where data are currently lacking. The synthesis of data will contribute to improving existing or catalyzing novel collaborations between key data holding agencies and research institutions, including the IPCC, WRI, WHO, FAO, COMTRADE, World Bank, Global Burden of Disease database, UN Statistical Division and CropGAP.

Another aim of the project is to advance the empirical definition of what constitutes a healthy and sustainable diet by developing an integrated framework of indicators on nutrition, health and environmental sustainability. There is a strong need for such an integrated framework amidst the existing plethora of fragmented indicators, indices, codes, guidelines and certification schemes, which are often perceived by non-expert actors to be overly technical.

Figure 1 below outlines the project's aims and outputs.

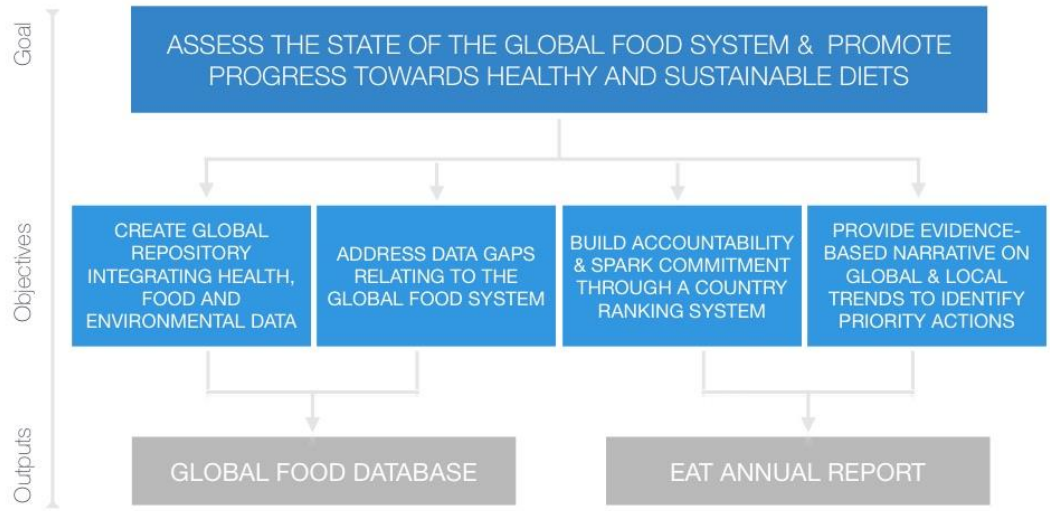

Figure 1: Summary of Project's Aims and Outputs

5. CONTRIBUTION AND ADDED VALUE

In order for the project to add value and avoid overlapping with existing initiatives of a similar character, a thorough scoping exercise was conducted of both existing global reports and databases relating to food, nutrition, health and environmental sustainability. The findings are summarized below.

Scoping of global reports

A comprehensive review of existing reports on the state of global food systems and diets identified 175 relevant reports from 118 institutions (Appendix, Table 1 describes the most relevant reports). While there is a large and diverse body of existing reports from a variety of institutions, relatively few cover the integration of food systems, nutrition, health and the environment, and even less do so with a global approach on an annual basis. There is a significant lack of reports which incorporate analysis, recommendations and data from a variety of sources and that target a multi-stakeholder audience. In particular, very few reports acknowledge the contributions of the private sector and civil society in improving the global food system.

Scoping of global databases

This scoping study showed that there are relatively few cross-cutting indicators on diets and food systems and those that are available are currently dispersed among a small number of databases (Appendix, Table 2). In particular, the existing databases do not present a coherent framework for establishing the links between the interconnected areas of food, health and sustainability. This scoping study thus indicates that there is value in developing a framework relevant to food systems and sustainable diets, and making the data available in an open-access and interactive format.

6. CONCEPTUAL FRAMEWORK

As a backbone to framing the structure and scope of the EAT Report and Global Food Database, a robust framework linking food, nutrition, health, and environmental sustainability will be developed, building on existing definitions and concepts. Such a framework will help define and integrate these interrelated problems and provide a mechanism for identifying common solutions. Four potential frameworks are considered and discussed below. All diagrams for the frameworks can be found in the Annex 1 (Figures 1-6).

1) Diet (‘plate’) perspective

This framework assesses whether diets defined as healthy are also sustainable, and vice-versa. It would compile a set of essential indicators (environmental, nutritional and food safety) to consider when assessing the health and sustainability performance of diets (Appendix Table 3, Appendix Figure 1 & 2).

Another approach to analyzing dietary health and sustainability is to assess the existence and quality of national dietary guidelines. This would require developing a systematic approach to analyzing the quality of dietary guidelines across countries. According to FAO, only one hundred countries currently have dietary guidelines at all, and only a few of these countries have developed guidelines that aim to optimize nutritional outcomes and environmental sustainability (Appendix Figure 3).

2) Food value-chain perspective

A value-chain perspective implies adopting a broader approach to analyzing the food-nutrition-health-environmental sustainability nexus. It assesses how the range of activities undertaken across the food value-chain (farming, processing, packaging, storage, transport, loss and waste) effect or relate to a set of indicators on environmental sustainability and health (Appendix Figure 4). The unit of assessment is not a given food commodity or diet, but a given activity or stage in the value-chain. Similarly to the diet framework (6.1), an 'EAT Production Index' could be developed to measure and rank the *domestic, production-based* impacts of countries on health and the environment.

3) A food systems perspective

This framework would analyze the multiple complex interactions between food systems, nutrition, public health, and the environment by organizing interactions and overlaps through a Venn diagram (Appendix Figure 5). This framework enables a whole-of-systems approach to assess the interactions between food production practices, environmental degradation and climate change, nutrition and diets, food security and food safety, and socioeconomic change (Appendix Figure 6).

4) Sustainable Development Goals (SDGs)

Among the 169 proposed targets of the SDGs, 58 pertain to food (Appendix Figure 7), thus there is an opportunity to adopt a framework that would monitor progress towards meeting these targets. Although comprehensive, the SDG targets do not sufficiently reflect the interactions between food, nutrition, health, and environmental sustainability, however they will be instrumental for the sustainable development agenda.

7. CONTENT & DELIVERABLES

This project will deliver two interlinked components:

1. Global Food Database
2. EAT Report

1) Global Food Database

The Global Food Database is intended to serve as a comprehensive global repository of continuously updated data on selected indicators that collectively track progress towards achieving universal access to affordable, diverse, and, healthy diets produced within a sustainable food system. To this end, it will offer a holistic perspective of the global food system. The database will analyze trends in dietary consumption and food production practices, and their interaction with nutrition, health, and the environment. Having one single

comprehensive database where data is open-access, freely downloadable, and categorized into an easily navigated menu will significantly facilitate the process of data searching and analysis for diverse audiences.

Depending on the chosen conceptual framework for exploring the links between food, nutrition, health, and environmental sustainability (see Section 6), the database will incorporate indicators spanning food production processes (farming practices, harvest, processing, packaging, storage, transport, procurement, loss and waste), dietary quality, availability and affordability of good food[1], food safety, diet related diseases and their economic impact, the environmental impacts of agriculture and food systems, the impacts of environmental/climate stresses and shocks on food systems, and the resilience of food systems to withstand environmental shocks. In the first stage, data will be collected at country level resolution, with the long-term objective of gathering data at finer scales as well as presenting data in disaggregate forms (e.g. by sex or age). The database structure will also be designed such that users can easily find the type of data they require and conduct simulations using analytic tools.

Interactive data visualization and analysis tools will be made available on the database website. These features will include the ability to:

- Generate world maps that display states or flows at different spatial resolutions;
- Construct time series showing historical changes in indicators of interest;
- Plot two- or three-dimensional graphs to compare relationships between indicators;
- Assess the impacts of a specific diet across a range of health and sustainability indicators, and map a multidimensional representation of dietary impacts (see Annex Figure 2);
- Compare/rank diets according to different health and sustainability parameters;
- Compare/rank countries against the 'EAT index', a ranking of countries in terms of healthy and sustainable diets or domestic food production (introduced in Section 6.1);
- Assess which diets have the least net impact for different baseline units (e.g. calorie, volume or monetary value);
- Explore the absolute and relative impacts of processes at each value-chain stage on a given health or sustainability indicator;
- Geographically trace the journey of food commodities (by category and country of origin) from production to consumption and disposal;
- Provide the basis for developing infographics supported by quantitative data.

2) EAT Report

The EAT Report on the State of the Global Food System will illuminate trends, drivers and dynamics between food systems, nutrition, public health, and the environment through novel forms of data presentation (e.g. maps and infographics) and concrete case studies. The report will present an up-to-date status on global, regional and national progress towards achieving healthy diets from sustainable food systems.

[1] To be defined by a set of criteria which would encompass types of food (e.g. fruits and vegetables) and characteristics of food (e.g. fresh, ecolabeled).

The report will build substantially on the data collated and generated in the Global Food Database, serving partially as the 'outward face' of the database and as a means to consolidate and communicate complex information contained in the database in an understandable and engaging way. By consolidating state-of-the-art data and information, one of the most important objectives of the report is to highlight gaps in information and data on specific nexus issues, and propose means to fill them.

A unique and defining component of the EAT Report will be to provide a yearly ranking of world countries against the 'EAT Index'. This type of ranking system has previously proved to be effective in sparking discussion on policy measures to improve countries' positions, and perhaps also in spurring beneficial competitiveness between countries, as demonstrated by SDSN's World Happiness Report. This work will complement EAT's interdisciplinary research theme on *Metrics for Healthy and Sustainable Food*[2] to advance the first generation of integrated indicators defining healthy diets from sustainable food systems.

The report will be made available in multiple languages and publishing platforms, and will be disseminated on its publication at the annual EAT Stockholm Food Forum, a high-level multi-stakeholder forum which takes place in early June in Stockholm, Sweden. The Stockholm Food Forum launch will be complemented by events held by SDSN and CGIAR.

The report will be structured as follows:

Body of the report:
This initial segment of the report will retain the same format year-to-year and will present a structured overview of trends surrounding key issues, measured by a fixed set of selected indicators that are tracked in the Global Food Database. In particular, the report will focus on the two-way interactions and nexus issues linking food, health and sustainability. This segment will show the magnitude, characteristics and geographic distribution of these key issues. Data will be presented in particular regional or country contexts as relevant. Another key feature of this segment will be a ranking of world countries against the EAT Index.

Thematic segment:
This segment will comprise in-depth analyses of a topical issue for the given annual edition, for instance micronutrient deficiencies or antimicrobial resistance. The issue will be chosen based on relevance to global trends identified by expert authors. For the given issue of focus, the characteristics, geographical distribution and magnitude of the issue will be described, its drivers of change will be examined, and future requirements to accelerate progress on the issue will be discussed, followed by a set of recommendations on potential solutions and interventions to policy-makers, consumers and/or food industry leaders as relevant.

This thematic segment will also incorporate real world case-studies relating to the issue represented both globally and locally in different parts of the world. Reciprocally, case-studies of best practice will be presented, with a reflection on the factors of success and potential scalability of the practices.

[2] http://eatforum.org/eat-science/

Report on the food system and diet-related SDGs:
This section will present the progress of the 58 SDG targets and their indicators that specifically address food systems and their interactions with nutrition, public health, and the environment. Indicators to track progress towards the SDG targets are not yet in place, and are due to be adopted in March 2016 after a deliberation process that involves the UN member states' statistical offices and key UN agencies. Hence, this third segment of the EAT Report will be launched in 2017 once the indicator framework has been made official.

8. METHODOLOGY

WORKFLOW
Database and report development will be conducted in five steps:

1. **Selection** of conceptual framework
2. **Search** for relevant existing data on the above themes across a range of data sources and **shortlist** a desirable set of indicators to be included in the database (step already initiated through *Scoping Report*);
3. **Import and consolidate** existing data in a structured fashion in line with conceptual framework into the database, and develop data visualization and analysis tools;
4. **Establish** the EAT Index
5. **Identify** data gaps based on the consolidated existing data, and develop a strategy for empirical or model-based generation of missing data to complement the database (some of these gaps are already known, e.g. food waste and resilience to shocks)[3];
6. **Generate** methods for data modeling to fill critical gaps in collaboration with the relevant UN agencies, national statistical offices and food companies.

1. Conceptual framework
The first methodological step is to determine the most relevant conceptual framework for assessing the links between food/diets, health and sustainability, based on alternatives presented in Section 6. The chosen framework will serve as the basis for structuring both the database indicators and chapters of the EAT Report.

2. Indicator selection
Indicators will be selected on the basis of the chosen conceptual framework(s) for linking food, health and sustainability according to data availability.

3. Data consolidation
A range of global organisations, agencies and international research institutions house data in relevant food databases, each with a focus on specific issues of the food-health-sustainability nexus. In order to develop the holistic database that this project aims to achieve, these data sources will have to be brought together within the Global Food Database. An initial liaison will therefore be initiated with each of the data-holding organisations, with the aim to ensure support and willingness to share data onto a new

repository managed by an external entity. Means of transferring primary or secondary data onto the Global Food Database, presentation of the data and database maintenance will be discussed with each of the data-holders. Inspiration will be taken from data handling and presentation of databases reviewed in the scoping report, particularly the Institute for Health Metrics and Evaluation's (IHME) Global Burden of Disease and IFPRI's Global Food Security Portal.

Data analysis and visualization tools
Available data analysis tools – including modeling, visualization and scenario exploration – will be reviewed as a basis for the Global Food Database, with the inclusion of novel tools. Data analysis experts will lead this process in the project team.

4. The EAT Index
In order to develop an EAT Index that score countries' performance in terms of food consumption or production respectively (Section 6.1) a fundamental step is to delineate what constitutes a healthy and sustainable diet. A preliminary conceptual figure is proposed in Appendix Figure 1.

Based on the multidimensional set of indicators – the EAT Index – and their respective thresholds, a 'healthy and sustainable diet zone' will be defined (concept illustrated in Appendix Figure 2), which will allow the calculation of a net performance score for individual diets, and aggregate these to country averages (see Section 7.2).

5. Identification of data gaps
The project will identify gaps and subsequently stimulate data generation to address these gaps for specific indicators or world regions where it is currently lacking.

6. Data generation
Methodological approaches will also be developed that enable the data generation and extrapolation based on data from existing datasets and using advanced statistical methods. For example, this may include the development of an algorithm that combines food trade with production to generate data on virtual resource flows (e.g. carbon, water or land) which could subsequently be plotted onto a world map. Furthermore, the development of novel indicators that trace areas of interest (e.g. consumer food waste), which are currently not measured, will be pursued. The increased resources required to pursue these data gaps is reflected in the budget (Section 12)

9. PROJECT IMPACT

Through consolidating data and information, the project will **identify priority areas and critical leverage points** – thematic and geographic – for action, for example what world regions suffer from the greatest yield gaps or micronutrient deficiencies, which production practices are the most harmful to health and environment in terms of agricultural run-off and chemical leakage, or which stages of commodity supply-chains suffer from the greatest loss and waste.

From the identified priorities, the EAT Report will **translate priorities into concrete recommendations** on which policies and institutional capacities need to be strengthened at international and national levels, how to support best practices within the food industry and how to promote better food choices among consumers through improving the availability, affordability and acceptability of healthy and sustainable food. The intent is for these recommendations to be immediately actionable by the concerned stakeholders.
Through developing the EAT Index, the project will **bring specificity to the definition of a healthy diet from a sustainable food system** – a concept that has yet no clear, quantitative definition. It will contribute to consolidating the current multitude of indices, guidelines and certification schemes in order to provide one holistic definition that enlightens consumers, policy-makers and food industries on sound food choices, food sourcing or food and agricultural policy choices. Country ranking against the two-partite EAT Index is also hoped to **spur positive competition between countries** in terms of best practice.
On the whole, the project will contribute to **lift the integrated agenda for healthy diets and sustainable food systems** as a top priority for global and national policy, and mainstream it in the public discourse. Fundamentally, it will render policy-makers and food businesses accountable to shifting towards best practice.

10. TIMELINE

The project will be formally launched at the EATx Post-2015 event on September 25, 2015, in New York City and a beta version of the Global Food Database and a synthesis EAT Report will be launched at the 3rd Annual EAT Stockholm Food Forum in June 2016. To facilitate this, a Project Secretariat could be established as early as January 2016. The beta version of the Global Food Database will take into account the important discussions in late 2015 and throughout 2016 surrounding the SDGs and the data and indicators required to track their progress. An expanded version of the Global Food Database and the inaugural EAT Report will be launched at the 4th Annual Stockholm Food Forum in June 2017 (See Figure 2).

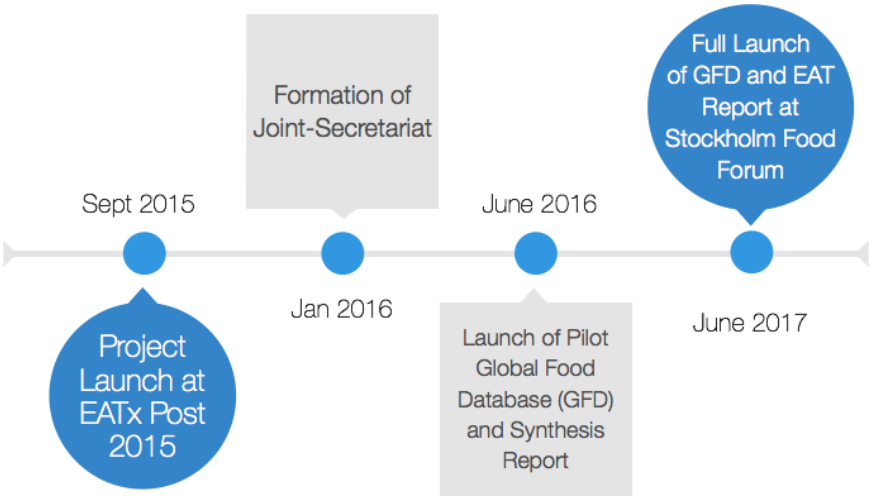

Figure 2: Project Development Timeline

11. PROJECT PARTNERS AND ORGANISATION

Partner organisations
This project is a collaboration amongst three partner organizations who contribute unique, complementary expertise and reach: the EAT Initiative, the Sustainable Development Solutions Network (SDSN), and the CGIAR Consortium. Together, these organizations are well positioned to spearhead an EAT Report and Global Food Database given their strong scientific and technical expertise combined with their focus on influencing policy discourse. In particular, SDSN has experience bringing together economists, psychologists, statisticians, health and public policy professionals to produce its annual World Happiness Report attracting millions of downloads. IFPRI, an affiliate of CGIAR, similarly tracks major developments in the global food system through its the annual Global Hunger Index, Global Food Policy Report and Global Nutrition Report, while also managing the IFPRI Food Security Portal. The EAT Initiative seeks to stimulate interdisciplinary research by bringing together experts in science, politics, business and civil society at its annual EAT Stockholm Food Forum event. The following is a short description expanding on the functions of each of the project partners:

Sustainable Development Solutions Network
Launched by UN Secretary-General Ban Ki-moon in August 2012, the Sustainable Development Solutions Network (SDSN) mobilizes scientific and technical expertise from in support of sustainable development problem solving at local, national, and global scales. The SDSN aims to accelerate joint learning and help to overcome the compartmentalization of technical and policy work by promoting integrated approaches to the interconnected economic, social, and environmental challenges confronting the world. Special emphasis is placed on strengthening the roles of universities and other research and knowledge institutions to contribute to the attainment of the SDGs.

The Network has established twelve solution-orientated Thematic Groups comprising leading scientists, engineers, academics and practitioners from business and civil society to promote solutions to key challenges of sustainable development. The SDSN Thematic Group 7 on Sustainable Agriculture and Food Systems focuses on solutions that contribute to a more sustainable and equitable global food system and is well placed to support the development of this project.

EAT Initiative
EAT is a global initiative linking food, health and sustainability across science, business, politics and civil society. EAT's vision is to feed more than 9 billion healthy people within safe Planetary Boundaries by mid-century.

EAT spearheads a holistic approach to today's food related challenges; recognizing that climate change, global health, sustainability and food security are not just independent fields of science and research but also important political issues and business opportunities. EAT is committed to finding and capitalizing on the common solutions across these traditionally siloed sectors.

Each June EAT hosts the prestigious Stockholm Food Forum; a global convening of international stakeholders, partners and experts across sectors and scientific disciplines, to facilitate new partnerships and collaborations at the food-health-sustainability nexus.

CGIAR Consortium

The CGIAR Consortium is the only worldwide partnership addressing agricultural research for development, whose work contributes to the global effort to tackle poverty, hunger and major nutrition imbalances, and environmental degradation.
CGIAR's work is carried out by 15 Research Centers that generate and disseminate knowledge, technologies, and policies for agricultural development.

Through these centers, CGIAR employs almost 10,000 scientists and staff in 96 countries, with unparalleled research infrastructure and dynamic networks across the globe.
The International Food Policy Research Institute (IFPRI) is a research center of the CGIAR Consortium and provides research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition in developing countries.

Each of the three partner organizations will provide direct support to the Secretariat in their areas of strength. CGIAR is well suited to provide technical guidance with their experience in database development (particularly, the IFPRI Food Security Portal) and global report coordination and production. The EAT Initiative is well placed to support the advocacy and outreach efforts of the project, given their extensive networks and successful annual Stockholm Food Forum event. SDSN has extensive collaborative links with the UN and member governments throughout the world and can play a lead role in the dissemination of findings.

The partnership arrangement between CGIAR, the EAT Initiative and SDSN will be formalized in a Memorandum of Understanding and a Partnership Agreement. This arrangement will provide details on the legal structure of the project and how funds will be utilized for the project amongst the three organizations.

Project Management

The EAT Report and Global Food Database will be governed by the Project Leadership Committee (PLC), whilst content decisions will be the responsibility of an Independent Expert Advisory Group (IEAG). The Project Secretariat, under the leadership of a Project Director, will undertake the day-to-day work of the project. This arrangement is outlined in Figure 3 below.

Figure 3: EAT Project Organizational Chart

Project Leadership Committee (PLC)

Mobilizing expertise from each of the three partner organizations, the PLC will oversee the development of the EAT Report and the related Global Food Database. The PLC will be responsible for the governance and managing the legal entity of the project, as well as appointing the IEAG and Project Director. The PLC will initially be comprised of two members from each of the three partner organizations described above.

Proposed PLC Members:

- Prof Johan Rockström (Chair, EAT Advisory Board; Executive Director, Stockholm Resilience Centre)
- Dr. Frank Rijsberman (CEO, CGIAR)
- Prof Jeffrey Sachs (Director, SDSN, and Director, The Earth Institute, Columbia University)
- Dr. Gunhild A. Stordalen (Director, EAT; Founder & Chair, Stordalen Foundation)
- Dr. Shenggen Fan (Director General, International Food Policy Research Institute /CGIAR)
- Prof Glenn Denning (Senior Policy Advisor, SDSN; Professor of Professional Practice in International and Public Affairs, Columbia University)

The partner organizations – through their respective boards and constituent organizations – have extraordinary convening power to draw on world-class researchers, practitioners and policy makers in this field. Moreover, through the PLC, there is direct access to global and national political leaders, thereby ensuring that the results of this project have maximum possible impact.

Independent Expert Advisory Group

In addition to the core PLC members, the project will enlist advisory support from other leading experts in the field through an Independent Expert Advisory Group (IEAG). The IEAG will provide guidance on the content and direction of the EAT Report and Global Food Database. Working closely with the Project Director of the Project Secretariat, the IEAG will

provide direction on the content of the EAT Report and Global Food Database and decide on the contributing authors.

The IEAG will be appointed by the PLC, with the intention of securing a diverse group of experts, from different industry backgrounds including business, civil society, government and academia. Priority will be given to female candidates from low and middle-income countries with a proven track record in the fields of health, nutrition, agriculture and sustainable development. IEAG members will not be remunerated for their time. However, it is expected that the IEAG will meet twice a year, organized and funded by the Project Secretariat. A Chair, chosen by the PLC, will lead these bi-annual meetings. The Chair will rotate annually and will also join the PLC ex-officio. This will ensure constant collaboration and communication between the PLC and IEAG, despite their different advisory roles in the project.

Project Secretariat

A Project Secretariat, reporting directly to the PLC, will manage the day-to-day operations of the project. Subject to the concurrence of the partners, the Secretariat will be hosted at one of the three participating partner organizations, to be determined by the PLC. Regardless of its physical location, the Secretariat will be comprised of a small team of researchers and development practitioners experienced in project management and conducting high-level research. The Secretariat will be headed by a Project Director whose primary function will be to lead the strategic development of research and analysis for the EAT Report and guide the Global Food Database. The Project Director (50% time allocation) will also be responsible for negotiating and nurturing partnerships with individuals and institutions who will contribute to the Global Food Database and the EAT Report. This role will include fundraising and participating in outreach events in relation to the EAT Report and other relevant conferences or workshops.

Other team members will initially include a Research Coordinator and three Research Assistants (See Figure 2). These members of the Secretariat team will work full-time to manage the various tasks associated with the EAT Report and Global Food Database including compiling data, drafting sections of the EAT Report, writing content for the Global Food Database website and other administrative tasks. The Research Coordinator will manage the day-to-day operations in research and analysis and will also be responsible for administrative oversight and communication tasks, such as creating communication outreach material (online and print). The full-time Research Assistants will report to the Research Coordinator and will undertake research and analysis in relation to both the EAT Report and Global Food Database. In the first two years, there will be three research assistants, with one primarily dedicated to supporting the content of the Global Food Database. The other two research assistants will be heavily involved in preparing content for the EAT Report, conducting scoping surveys and literature reviews and supporting guest authors as well as writing blog posts and other content for the Global Food Database website. In the third year, as the project expands, two additional Research Assistants will be brought on to support increasing workload.

The Secretariat would also comprise of qualified part-time interns. Their responsibilities will principally involve assisting in desk research and analysis.

12. BUDGET

Each of the partner organizations has provided in-kind support for the initial development of the proposal and the coordination of the project, including a project design workshop in August 2015. For the next phase of the project, significantly more resources will be required to establish a Secretariat and begin developing the Global Food Database.

Table 1 below provides an overview of the budget for the first three years of the project (2016, 2017 and 2018). These calculations are based on the establishment of a Secretariat in January 2016 and a synthesis EAT Report in June 2016. Budget line items include staff salaries, publication costs, and travel for Secretariat and PLC members, and costs for technical consultants.

Personnel costs include salary and fringe benefits for the Project Director (billed at 50% of the time), Research Coordinator and three Research Assistants (full-time). A communications budget of $200,000 over the course of the 3+ years allows for various outreach events, the publication of the report and associated documents, as well as the establishment of an online presence for the report and database. A travel budget of $65,000 in the first two years and $80,000 in the third year will be required for participation in various conferences and workshops, such as the Annual EAT Stockholm Food Forum and meetings of the PLC and IEAG.

For the development of the Global Food Database, personnel costs include contractor fees for a technical expert and a computer programmer. These consultants will work closely with the Secretariat, in particular the Research Assistant focused on database management. In addition, certain infrastructural requirements have been calculated based on costs of setting up and maintaining an online freely accessible database and portal. Such database procurement and maintenance fees – including the personnel costs – will be higher in the initial development phase (January – December 2016) and will taper off in the second year. In the third year, higher database management costs reflect the need to expand the database to cover data gaps and improve data analysis and visualization tools.

Table 1: BUDGET

EAT Report and Global Food Database Budget Breakdown		Jan 1, 2016 - Dec 31, 2016			Jan 1, 2017 - Dec 31, 2017			Jan 1, 2018 - Dec 31, 2018			Jan 1, 2016 - Dec 31, 2018
Cost Description	***Unit Cost***	**Project Effort (%)**	**Unit Qty**	**Total Project Cost**	**Project Effort (%)**	**Unit Qty**	**Total Project Cost**	**Project Effort (%)**	**Unit Qty**	**Total Project Cost**	**Grand Total Project Cost**
Joint-Secretariat											
Personnel Costs				**505,908**			**400,500**			**531,000**	**1,437,408**
Salary for Project Director	*150,000*	50%	1	75,000	50%	1	75,000	50%	1	75,000	225,000
Salary for Research Coordinator	*75,000*	100%	1	75,000	100%	1	75,000	100%	1	75,000	225,000
Salary for Research Assistants	*50,000*	100%	2	100,000	100%	2	100,000	100%	4	200,000	400,000
Salary for Research Assistant - Database Management	*50,000*	100%	1	50,000	100%	1	50,000	100%	1	50,000	150,000
Fringe Benefits*				196,908			91,500			122,000	410,408
Interns (no fringe)	*30,000*	30%	2	9,000	30%	2	9,000	30%	4	9,000	27,000
Communications & Outreach				**50,000**		1	**62,500**		1	**87,500**	**200,000**
Outreach Seminar/Workshop Events			1	35,000		1	45,000		1	60,000	140,000
Website Maintenance			1	2,500		1	2,500		1	2,500	7,500
Report Publication & Other Promotional Material			1	12,500		1	15,000		**1**	25,000	52,500
Travel			1	**65,000.00**		1	**65,000**		1	**80,000**	**210,000**
Indirect costs (overhead for office space, utilities, etc.)	*24,000*		1	**24,000.00**		1	**24,000**		1	**24,000**	**72,000**
Global Food Database Development - Consulting Costs				**105,400**			**58,120**			**106,240**	**269,760**
Lead Technical Consultant (no fringe)	*105,600*	25%	1	26,400	20%	1	21,120	40%	1	42,240	89,760
Computer Programmer (no fringe)	*68,000*	50%	1	34,000	25%	1	17,000	50%	1	34,000	85,000
Database Set Up (Server and Hardware Specifications)	*25,000*		1	25,000		0	-		0	-	25,000
Database Maintenance/Hosting/Infrastructure			1	20,000		1	20,000		1	30,000	70,000
Subtotal				**$750,308.44**			**$610,120.00**			**$828,740.00**	**$2,189,168.44**
Overhead (15% of direct costs)				**$112,546.27**			**$91,518.00**			**$124,311.00**	**$328,375.27**
TOTAL PROJECT COSTS				**$862,854.71**			**$701,638.00**			**$953,051.00**	**$2,517,543.71**

*** Fringe rates are calculated based on Columbia University rates and have ben calculated assuming government funding sources:**

28.2% for salaries charged to government grants and contracts

30.5% for salaries charged to other funding sources

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14. DEFINITIONS

A **food system** is defined as a system that "embraces all elements (environment, people, inputs, processes, infrastructure, institutions, et cetera) and activities that relate to the production, processing, distribution, preparation, and consumption of food and the outputs of these activities, including socio-economic an environmental outcomes.", drawing from the UN Secretary General's Zero Hunger Challenge. A global food system that in all of its elements supports sustainable diets will be necessary for human and ecological wellbeing now and in the future.

Sustainable diets is defined by the Food and Agriculture Organization (FAO), Bioversity, and others as "those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources" (FAO, 2010).

In the project description below, the term **sustainability** refers to environmental sustainability; the social and economic dimensions of the classical triple-bottom-line definition are considered separately.

15. APPENDIX

Table 1: List of the most relevant reports identified (I: Integration of food, health and environment)

Title	**Organization**	**Timing**	**Overall focus**	**I**
Global Nutrition Report (2014)	International Food Policy Research Institute	Repetitive	Presents nutrition data for all countries, focus is on measuring progress and accountability.	No
Global Food Policy Report (2015)	International Food Policy Research Institute	Repetitive	Yearly overview of the food policy developments that have contributed to or hindered progress in achieving food and nutrition security.	Yes
The State of Food and Agriculture (2014/13)	Food and Agriculture Organization	Repetitive	Thematic report focus on an important issue in the field of food and agriculture.	Yes
The State of Food Insecurity in the World (2015)	Food and Agriculture Organization	Repetitive	Food insecurity and progress made towards achieving the internationally established hunger targets.	Yes
Global Hunger Index	International Food	Repetiti	Comprehensively measures and	No

(2014)	Policy Research Institute	ve	tracks hunger globally and by region and country.	
High Level Panel of Experts on Food Security and Nutrition: Food security and climate change (2012)	FAO Committee on World Food Security (CFS)	Repetitive	Reviews existing assessments and initiatives on the effects of climate change on food security and nutrition.	No
Final Report of the Special Rapporteur on the Right to Food (2014)	UN Special Rapporteur on the Right to Food	Repetitive	Presents a ‘diagnosis’ on the current state of the global food system and suggests urgent need for reform	Yes
Creating a Sustainable Food Future (2014)	World Resources Institute	One off	Proposes a menu of solutions to the "combined challenge" of feeding the world's growing population whilst ensuring sustainability and alleviating poverty.	No
Reviewing Interventions for Healthy and Sustainable Diets (2015)	Chatham House	One off	Research paper that reviews policy interventions that may influence diets to be more healthy and sustainable.	No
Future Diets (2014)	Overseas Development Institute	One off	Comprehensive account of future diets and link to health and development, little focus on environment and agriculture.	No
Climate Change and Food Systems: Global assessments and implications for food security and trade	Food and Agriculture Organization	One off	Describes how global warming will impact where and how food is produced and discusses the consequences for food security, health and climate adaptation.	No
How Can Agriculture and Food System Policies Improve Nutrition? (2014)	Global Panel on Agriculture and Food Systems for Nutrition	One off	Food system condensed into four divisions, policy opportunities to improve food systems under each division.	No
Improving Child Nutrition: The achievable imperative for global progress (2013)	UNICEF	One off	Uses case studies and comprehensive national data updates to outline the state of child undernutrition and examples of solutions. Firmly focused on undernutrition with little discussion of the environment or food systems.	No

Title	**Organization**	**Timing**	**Overall focus**	**I**
Global Sustainable Development Report (2015)	UN Sustainable Development	Repetitive	Reviews international progress on sustainable development - much broader than food systems.	No
Climate Change Synthesis Report (2014)	Intergovernmental Panel on Climate Change	Repetitive	Comprehensive technical account of climate change science, minimal discussion of food systems.	No
Commission on Ending Childhood Obesity (2015)	World Health Organization	One Off	Thorough overview of prevalence and consequences of childhood obesity, and prevention strategies. Does not discuss environment.	No
Biodiversity for Food and Agriculture: Contributing to food security and sustainability in a changing world (2014)	Food and Agriculture Organization	One off	Explains why biodiversity is important for food security and environmental sustainability.	No
Building a common vision for sustainable food and agriculture (2014)	Food and Agriculture Organization	One off	Outlines FAO's vision for sustainable food and agriculture systems - quite institutional specific.	No
Sustainable Diets and Biodiversity Directions and Solutions for Policy, Research and Action (2010)	Food and Agriculture Organization	One off	Book of conference proceedings, launched consensus definition of sustainable diets.	Yes
World Development Report (Annual)	World Bank Group	Repetitive	Comprehensive account of an annual theme related to development, has covered agriculture and climate change, fiscal instrument focus.	No
Agricultural Outlook 2015-2024 (2015)	Organization for Economic Co-operation and Development and Food and Agriculture Organization	Repetitive	Provides an annual assessment of prospects for the coming decade of national, regional and global agricultural commodity markets.	No

Assessing Global Land Use- Balancing Consumption with Sustainable Supply (2014)	United Nations Environment Programme	One off	Provides a comprehensive overview of the scientific options for sustainable land management.	Yes
Achieving food security in the face of climate change (2012)	CGIAR Commission on Sustainable Agriculture and Climate Change	One off	Final report from commission, well integrated approach to nutrition and climate change challenges to agriculture	Yes
Commission on Planetary Health (2015)	The Lancet	Repetitive	Integrates thinking on human and planetary health: takes comprehensive approach to food systems but broader remit.	Yes
Commission on Climate Change and Health (2015)	The Lancet	Repetitive	Summarizes the latest evidence linking climate change to human health and the co-benefits of reducing emissions, as well as recommending policy decisions. Food systems a minor focus.	No
Healthy Food for a Healthy World: Leveraging Culture and Food to Improve Global Nutrition (2015)	Chicago Council for Global Affairs	One Off	Comprehensive and integrated account of global food systems; slant, authorship and recommendations are US focused.	Yes
The New Science of Sustainable Food Systems: Overcoming Barriers to Food Systems Reform (2015)	International Panel of Experts on Sustainable Food Systems- IPES Food	One off	Makes the case for reaching beyond the traditional bounds of the scientific community in conducting an analysis on food systems.	Yes
Changing what we eat: A call for research & action on widespread adoption of sustainable healthy eating (2014)	Food Climate Research Network	One off	Report suggests an agenda for research on sustainable healthy eating.	Yes
New Climate Economy Reports (2014 and 2015)	The Global Commission on the Economy and Climate	Repetitive	Persuasive case for climate solutions that also grow the economy, negligible focus on health.	No

Improving Nutrition Through Agriculture (2014)	International Fund for Agricultural Development	One Off	Case Studies of IFAD's work.	No
Food security policies: making the ecosystem connections (2013)	International Union for Conservation of Nature and Natural Resources	One off	Underlines link between ecosystems and food security, identifies current gaps in policy and subsequent recommendations.	No
Growing a Better Food System (2011)	Oxfam	One off	Assesses the current state of the food system and analyses the determinants behind the skewed and failing system.	Yes
Menus of Change (2015)	The Culinary Institute of America	Repetitive	Offers recommendations, principles and guidance on how to create healthy and sustainable food service industries.	Yes
Double Pyramid 2015: Recommendations for a Sustainable Diet (2015)	Barilla Centre for Food and Nutrition	Repetitive	Promotes the new edition of the BCFN food and environmental double pyramid.	Yes

Table 2. Distribution overview of most relevant indicators across global databases

Category	Data availability and distribution
Food, Agriculture, and Diets	15 out of 21 relevant indicators are housed in FAO databases or the World Bank's WDI. For the remaining indicators, EIU houses three qualitative indicators; IFPRI houses important data on agricultural TFP growth; WFP hosts the food consumption score; and the Global Cold Chain Alliance provides interesting information on cold storage with very limited coverage.
Health & Nutrition Outcomes	8 out the 15 relevant indicators are housed by FAO and the World Bank. Remaining indicators include household data (housed in Harvard's Dataverse), the Global Hunger Index (housed by IFPRI, GlobalStat, and many others), various measures of overweight and obesity (housed by WHO, WDI, and many others), and two indicators on food safety (housed by EIU and HANCI).
Environment & Resource Use	5 out of the 10 relevant indicators are housed by FAO and the World Bank, three are housed by IFAD, and one by the Alliance Development Works/Bündnis Entwicklung Hilft (BEH). The database GlobalStat also contains at least three of these

	indicators, as well as other relevant indicators.
Development	13 out of the 26 relevant indicators are housed by FAO and the World Bank, three by WTO, two by IFAD, and two by WHO. The remaining indicators are housed by HANCI, EIU, WEF, and IFPRI.

Table 3. Categorization of keywords from the FAO/Bioversity (2012) definition of a sustainable diet into different types of objectives

Environmental	Health/nutrition	Social/economic
Low environmental impacts (not specified)	Nutrition security	Culturally acceptable
Protective/respectful of biodiversity	Healthy life	Food security and accessibility
Protective/respectful of ecosystems	Nutritionally adequate	Economically fair and affordable
Optimizing natural resources	Safe and healthy	Optimizing human resources

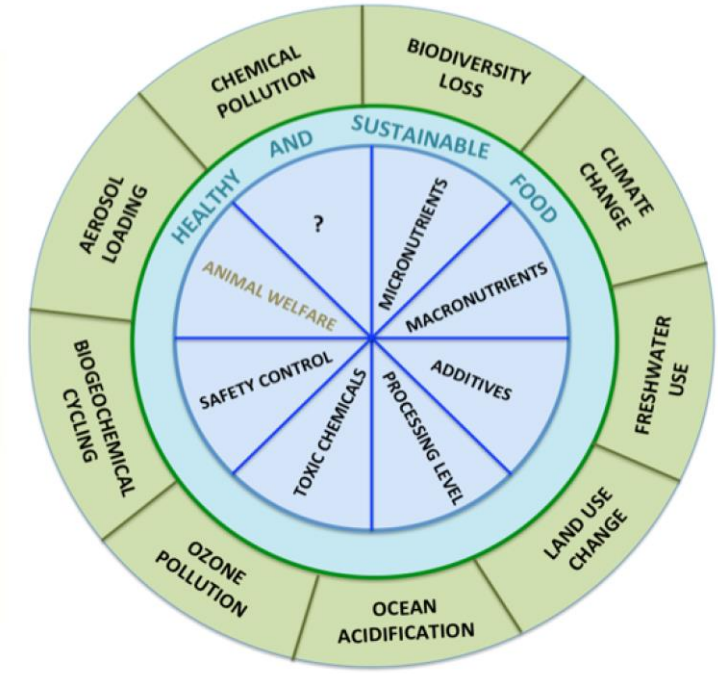

Figure 1. Plate schematization of the healthy and sustainable food/diet zone, delimited by a set of health/nutrition and environmental parameters.

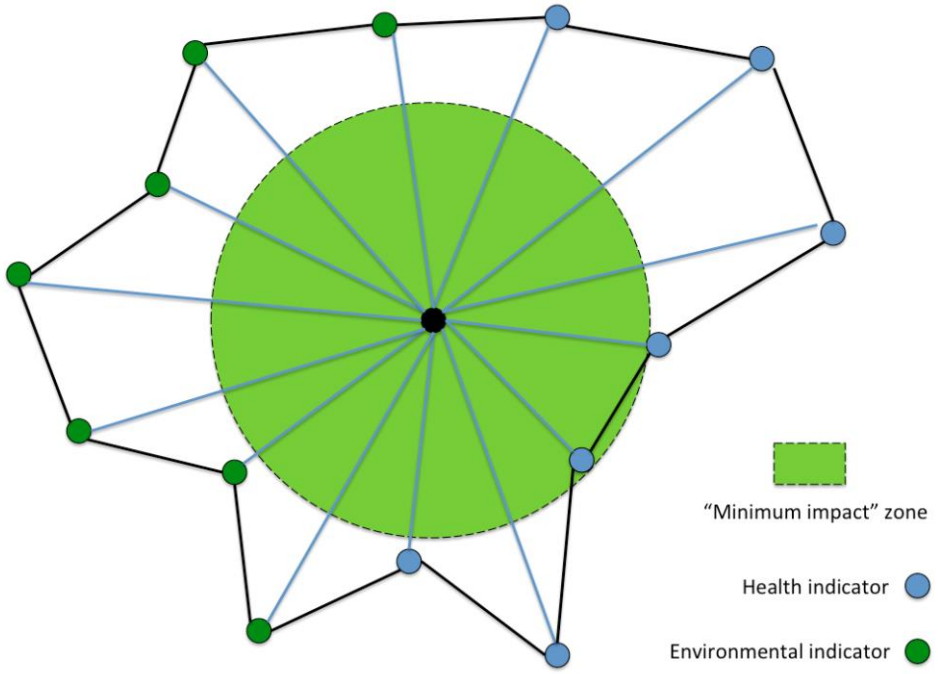

Figure 2. Conceptual illustration of a dietary performance

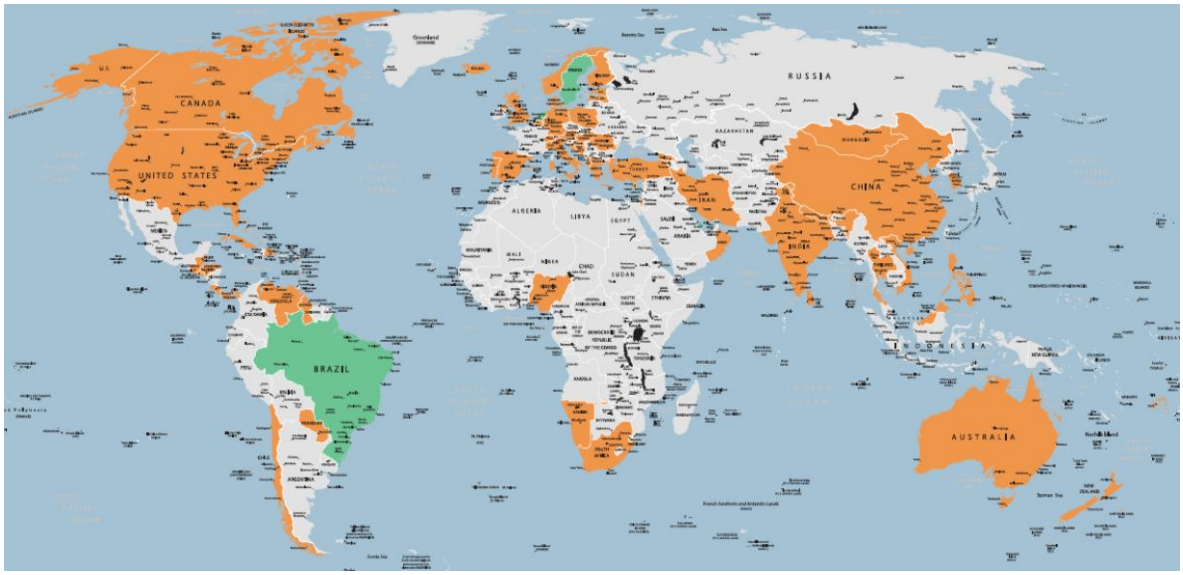

Figure 3. Dietary guidelines in the world (orange = dietary guidelines with nutritional focus; green = dietary guidelines integrating nutrition and sustainability)*; data source: FAO, 2015.*

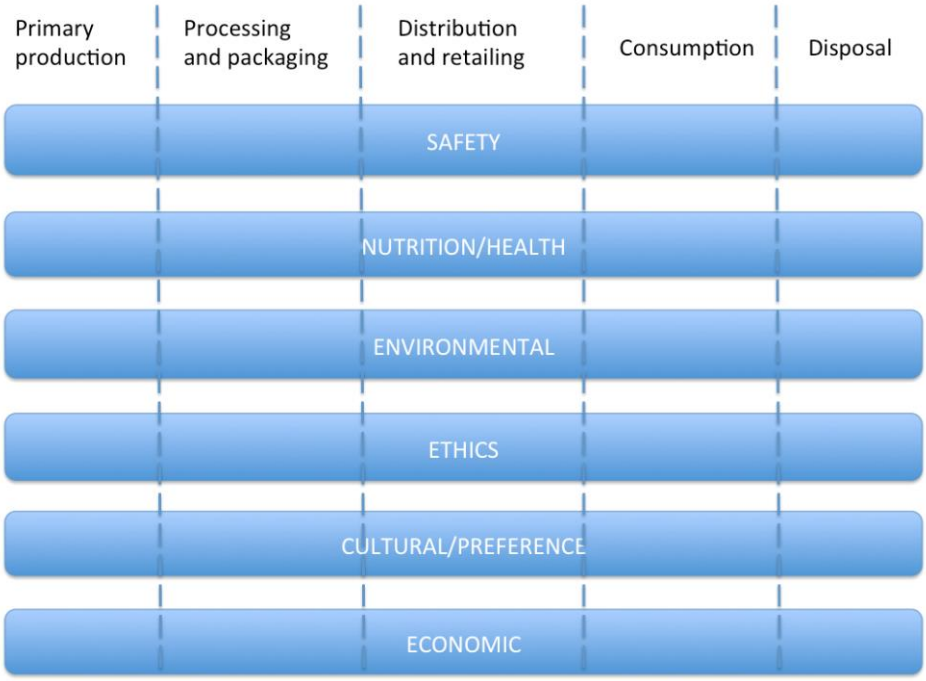

Figure 4. Matrix depicting the stages of the food value-chain and key dimensions to assess across each stage.

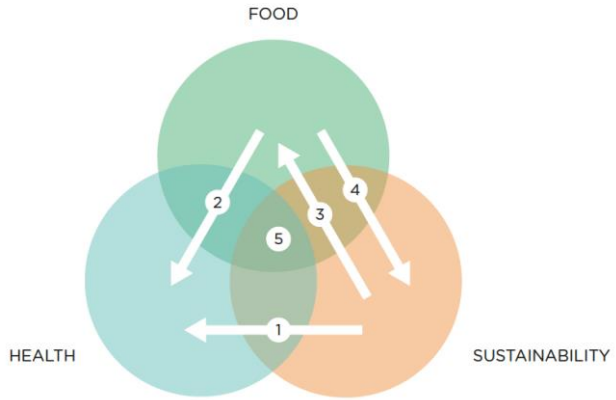

Figure 5. Conceptual representation of the multiple forms of interaction between food systems, health and sustainability.

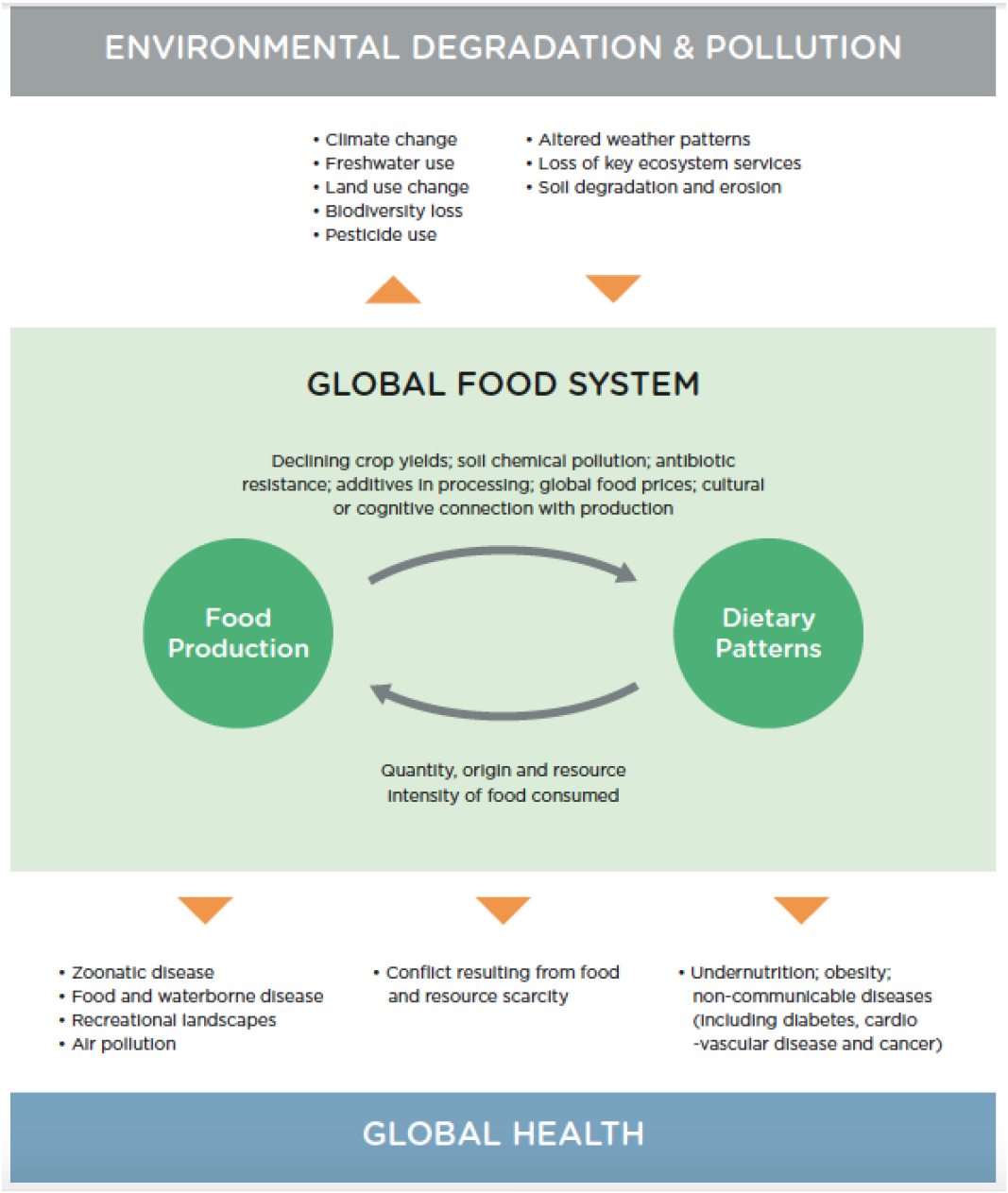

Figure 6. The global food system and its interactions with the environment and global health.

Figure 7. SDG targets related to the food system

1.4 By 2030, ensure that all men and women, particularly the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership, and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services including microfinance.
2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations including infants, to safe, nutritious and sufficient food all year round.
2.2 By 2030, end all forms of malnutrition, including achieving by 2025 the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women, and older persons.

2.3 By 2030, double the agricultural productivity and the incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment.
2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality.
2.5 By 2020, maintain genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge as internationally agreed.
2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development, and plant and livestock gene banks to enhance agricultural productive capacity in developing countries, in particular in least developed countries.
3.4 By 2030, reduce by one-third premature mortality from non-communicable diseases (NCDs) through prevention and treatment, and promote mental health and wellbeing.
3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination.
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse by x% globally.
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity.
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
6.b Support and strengthen the participation of local communities for improving water and sanitation management.
7.b By 2030 expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, particularly LDCs and SIDS.
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.
11.5 By 2030, significantly reduce the number of deaths and the number of affected people and decrease by y% the economic losses relative to GDP caused by disasters, including water-related disasters, with the focus on protecting the poor and people in vulnerable situations.

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management.
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities.
11.b By 2020, increase by x% the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, develop and implement in line with the forthcoming Hyogo Framework holistic disaster risk management at all levels.
12.2 By 2030, achieve sustainable management and efficient use of natural resources.
12.3 By 2030, halve per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains including post-harvest losses.
12.4 By 2020, achieve environmentally sound management of chemicals and all wastes throughout their life-cycle in accordance with agreed international frameworks and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment.
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.
12.6 Encourage companies, especially large and trans-national companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
12.a Support developing countries to strengthen their scientific and technological capacities to move towards more sustainable patterns of consumption and production.
12.c Rationalize inefficient fossil fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.
13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries.
13.2 Integrate climate change measures into national policies, strategies, and planning.
13.b Promote mechanisms for raising capacities for effective climate change related planning and management, in LDCs, including focusing on women, youth, local and marginalized communities.
14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution.
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans.
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information.
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from

introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the WTO fisheries subsidies negotiation.
14.7 By 2030, increase the economic benefits to SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism
14.a Increase scientific knowledge, develop research capacities and transfer marine technology taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular SIDS and LDCs.
14.b Provide access of small-scale artisanal fishers to marine resources and markets.
15.1 By 2020, ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and increase afforestation and reforestation by x% globally.
15.3 By 2020, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world.
15.4 By 2030 ensure the conservation of mountain ecosystems, including their biodiversity, to enhance their capacity to provide benefits which are essential for sustainable development.
15.5 Take urgent and significant action to reduce degradation of natural habitat, halt the loss of biodiversity, and by 2020 protect and prevent the extinction of threatened species.
15.6 Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources, and promote appropriate access to genetic resources.
15.8 By 2020 introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems, and control or eradicate the priority species.
15.9 By 2020, integrate ecosystems and biodiversity values into national and local planning, development processes and poverty reduction strategies, and accounts.
15.a Mobilize and significantly increase from all sources financial resources to conserve and sustainably use biodiversity and ecosystems.
15.b Mobilize significantly resources from all sources and at all levels to finance sustainable forest management, and provide adequate incentives to developing countries to advance sustainable forest management, including for conservation and reforestation.